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ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209
tenslow@adamsbroadwell.com

SO. SAN FRANCISCO OFFICE
601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

DANIEL L. CARDOZO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
LOULENA A. MILES
GLORIA D. SMITH

FELLOW
RACHAEL E. KOSS

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

May 9, 2008

VIA OVERNIGHT DELIVERY AND EMAIL

Thomas L. Morrison
Deputy Executive Director
California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

CBSC@dgs.ca.gov
(Attachments submitted in hardcopy only)

Re: **Public Notice of HCD Proposed Amendments of California Plumbing Code Sections 203.0, 909.1, 909.1.1, 909.1.2, 909.1.3, 909.1.4 & 909.1.5 Regarding Approval of Air Admittance Valves**

Dear Mr. Morrison:

The following comments are respectfully submitted on behalf of the California State Pipe Trades Council in opposition to the proposed California Plumbing Code ("CPC") amendments that would permit the installation and use of air admittance valves ("AAVs") in kitchen islands or similar island locations (hereinafter "kitchen islands"). The labor organizations that make up the Council represent literally thousands of plumbers and pipefitters in local unions across the state that are concerned about the safety of new building materials.

The California Building Standards Commission ("CBSC" or "Commission") is currently reviewing proposed building standard code submittals as part of its 2007 Annual Code Adoption Cycle to the California Building Standards Code. Included in this review are regulations proposed by the Department of Housing and Community Development ("HCD") that would amend CPC sections 203.0, 909.1, 909.1.1, 909.1.2, 909.1.3, 909.1.4 and 909.1.5 to allow the installation of AAVs in kitchen islands and other island locations ("Proposed AAV regulations"). These

comments are in response to the March 18, 2008 *Notice of Proposed Changes* issued by the CBSC.

There is substantial evidence that the approval of AAVs in kitchen islands may result in significant public health and environmental impacts. Accordingly, the proposed regulations approving these products may not be adopted until these potential impacts have been fully disclosed, analyzed and mitigated in an environmental impact report ("EIR") as required by the California Environmental Quality Act ("CEQA").

Because there is substantial evidence that the approval of AAVs may result in significant public health and environmental impacts, reliance on a negative declaration in lieu of an EIR would not satisfy the requirements of CEQA. These potential impacts include serious environmental and public health impacts stemming from the incursion of sewer gas into the living area.

The Commission may not approve the proposed regulations authorizing the use of AAVs until an EIR fulfilling the requirements of CEQA has been completed and certified. Until then, the Commission must disapprove the proposed regulations or, in the alternative, table the proposal pending further study. Adoption of these proposed regulations prior to completion of this review would violate state law.

The proposed approval of AAVs must also be denied because the Notice, Proposed Express Terms, and Initial Statement of Reasons ("ISOR") for the Project (collectively, "the 2008 CPC Adoption Notice") fail to meet the procedural and substantive requirements of the California Building Standards Law, California Health and Safety Code Section 18930 and the Administrative Procedure Act ("APA").

The California Building Standards Law Administrative Code requires the Code Advisory Committees to make a recommendation on every code change submittal. A recommendation shall include a substantiating reason and must either approve, disapprove, approve as amended or require further study of the proposed code changes. In this instance, the Code Advisory Committee recommended further study concerning AAVs due to the same performance and safety concerns raised in this letter. The Notice of Proposed Changes, however, provided incorrect and misleading information to the public, reporting that the Code Advisory Committee approved the proposed code changes with regard to AAVs.

The failure to accurately disclose the Committee's concerns over the performance and safety of AAVs renders this notice inadequate. This failure undermines the notice and opportunity to comment that is afforded the public under the building standards administrative code and the APA. Without correcting this error, the notice is ineffective and the public must be given another opportunity to comment on a correct notice of proposed code changes.

Additionally, Health and Safety Code Section 18930 requires that building standards be justified under the listed nine-point criteria. The proposed expanded approval of AAVs would not meet at least two of the nine-point criteria: (1) the requirement that the adoption of standards be in the public interest, and (2) the requirement that the adoption of standards would not be unreasonable, arbitrary or unfair. Because the proposed approval of AAVs for kitchen islands prior to the completion of an EIR would violate state law and would potentially result in numerous public health, safety and environmental impacts, adoption of these standards would be contrary to the public interest and unreasonable, arbitrary and unfair. In addition, the adoption of these proposed standards would be contrary to the public interest and unreasonable, arbitrary and unfair because such action would be inconsistent with the recommendation of the Code Advisory Committee.

It is critical to the health and safety of the California public that the potential impacts of AAVs be fully disclosed, evaluated and mitigated before these devices are approved for use throughout California. The proper forum for such evaluation is an EIR. Furthermore, the Commission must ensure that the adoption process complies with the procedural requirements of the California Building Standards Law and the APA.

I. CEQA APPLIES TO THE PROPOSED APPROVAL OF AAVS IN KITCHEN ISLANDS

A. Overview of CEQA

The purpose of CEQA is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made.[1] Thus,

[1] Pub. Resources Code §§ 21063 & 21100.

CEQA "protects not only the environment but also informed self-government."[2] The Supreme Court has held that CEQA is "to be interpreted ... to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[3] CEQA compliance prior to approving the use of AAVs in kitchen islands is not only prudent, but is legally required.

B. CEQA Applies to the Adoption of the Proposed Building Standards

An agency action is subject to CEQA if it: (1) is a discretionary action undertaken by a public agency, and (2) may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[4]

The adoption of regulations is considered "discretionary" under CEQA if any application of judgment is required.[5] The courts have uniformly held that the adoption of building standards meets this definition and is subject to environmental review under CEQA. In the case *Building Code Action v. Energy Resources Conservation and Development Commission*, the court held that adoption of energy conservation regulations establishing double-glazing standards for new residential construction was subject to CEQA since it could result in a significant impact on air quality as a result of increased glass production.[6]

The California Court of Appeal affirmed the application of CEQA to the Commission's approval of building standard regulations in the 2004 case, *Plastic Pipe and Fittings Association v. California Building Standards Commission (PPFA v. CBSC)*.[7] The court held that the approval of new building standards is a discretionary act and that no statutory or categorical exemptions from CEQA apply to the promulgation of building standards.[8]

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[2] *Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 108.
[3] *Laurel Heights Improvement Assoc. v. Regents of Univ. of Calif.* (1988) 47 Cal.3d 376, 390; *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 110.
[4] Pub. Resources Code §§ 21065, 21080; Cal. Codes Regs., tit. 14 ("CEQA Guidelines") §§ 15061, 15357, 15358, 15378.
[5] *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 206 (holding that CEQA applies to the enactment of regulations).
[6] *Building Code Action v. Energy Resources Conservation and Development Commission* (1980) 102 Cal.App.3d 577.
[7] *PPFA v. CBSC* (2004) 124 Cal.App.4th 1390.
[8] *Id.* at p. 1413.

In reviewing whether a government action may cause a physical change in the environment, the "fair argument standard" is applied.[9] Under this standard, CEQA review occurs "whenever it can be fairly argued on the basis of substantial evidence" that the project may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[10]

"'Substantial evidence' . . . means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[11] The CEQA Guidelines define substantial evidence as including "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."[12] As a matter of law, "substantial evidence include . . . expert opinion."[13]

The substantial evidence required to make the initial determination to apply CEQA is, necessarily, minimal.[14] A reviewing court's decision as to whether an activity is a "project" need only be based on the most preliminary of investigations, rather than based on an initial study or other environmental document. As one court observed, "[t]he existence of a project cannot depend on the outcome of the inquiry which the act contemplates only after the existence of a project is established."[15]

In the case at hand, substantial evidence that the approval of AAVs in kitchen islands may result in reasonably foreseeable indirect physical changes in the environment is presented herein and in the attached expert comments and appendices. This evidence is discussed in detail in Section II of this letter. Because the fair argument standard applies, this evidence conclusively establishes that CEQA applies regardless if other contrary evidence is presented.

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[9] *Dunn-Edwards v. Bay Area Air Quality Management District ("BAAQMD")* (1992) 9 Cal.App.4th 644, 654-656; *Castaic Lake Water Agency v. City of Santa Clarita* (1995) 41 Cal.App.4th 1257, 1264-1265.

[10] *Dunn-Edwards v. BAAQMD, supra*, 9 Cal.App.4th at p. 655.

[11] *Castaic Lake Water Agency v. City of Santa Clarita*, 41 Cal.App.4th at p. 1264-1265.

[12] CEQA Guidelines, § 15064, subd. (f)(5).

[13] Pub. Resources Code § 21080, subd. (e)(1); CEQA Guidelines § 15064, subd. (f)(5).

[14] *See Simi Valley Recreation and Park District v. Local Agency Formation Commission* (1975) 51 Cal.App.3d 648, 663; *Davidon Homes v. City of San Jose* (1997) 54 Cal.App.4th 106, 118.

[15] *Simi Valley Recreation and Park District v. Local Agency Formation Commission*, 51 Cal.App.3d at p. 663.

C. An EIR Must Be Prepared Prior to the Adoption of the Proposed Building Standards

The evidence presented herein is more than enough to meet the minimal standard of evidence required to trigger the requirement to comply with CEQA. Moreover, this same evidence establishes a fair argument that the approval of AAVs in kitchen islands may result in significant environmental impacts and thus requires the preparation of an EIR.

If an action is subject to CEQA, then an initial study must be prepared to determine the next required step.[16] An initial study is a preliminary analysis used to determine whether an EIR or negative declaration must be prepared.[17]

The courts have repeatedly recognized that the EIR is the "heart of CEQA."[18] CEQA requires that a public agency prepare an EIR on any activity it undertakes or approves which may have a significant impact on the environment. The EIR aids an agency in identifying, analyzing, disclosing, and, to the extent possible, avoiding a project's significant environmental effects through implementing feasible mitigation measures.[19] The EIR thus acts as an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return."[20]

In certain limited circumstances, a negative declaration may be prepared instead of an EIR. A negative declaration is permitted when, based upon the initial study, a lead agency determines that a project "would not have a significant effect on the environment."[21] However, such a determination may be made only if "[t]here is no substantial evidence in light of the whole record before the lead agency" that such an impact may occur.[22]

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[16] CEQA Guidelines § 15063.
[17] CEQA Guidelines §§ 15063, 15365.
[18] *The Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 926.
[19] Pub. Resources Code § 21002.1, subd. (a); CEQA Guidelines § 15002, subd. (a), (f).
[20] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.
[21] *Id.*; Pub. Resources Code § 21080, subd. (c).
[22] *Id.*

When determining if an EIR must be prepared, the fair argument standard applies. The fair argument standard is a "low threshold" test for requiring the preparation of an EIR.[23] A public agency must prepare an EIR whenever substantial evidence supports a fair argument that a proposed project "may have a significant effect on the environment."[24] Significant effect on the environment "means a substantial, or potentially substantial, adverse change in the environment."[25]

If the record contains substantial evidence supporting a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR, even though it may also be presented with other contrary evidence that the project will not have a significant effect.[26] CEQA places the burden of environmental investigation on government agencies and project proponents rather than the public.[27] As a result, an agency is not "allowed to hide behind its own failure to gather relevant data."[28] "If the lead agency has failed to study an area of possible environmental impact, a fair argument may be based on the limited facts in the record. Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences."[29]

In the case at hand, the record contains extensive evidence, including the attached expert comments and appendices, which establish that the approval of AAVs in kitchen islands may have a significant impact on the environment. Accordingly, preparation of an EIR is required prior to approval of these regulations.

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[23] *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 928.
[24] *Id.* at p. 927; Pub. Resources Code §§ 21100, 21151, 21080.
[25] Pub. Resources Code § 21068; *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[26] Pub. Resources Code § 21151, subd. (a); *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[27] *Id.*
[28] *Gentry v. City of Murietta* (1995) 36 Cal.App.4th 1359, 1378-1379, citing *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[29] *Id.*

II. SUBSTANTIAL EVIDENCE ESTABLISHES A FAIR ARGUMENT THAT THE APPROVAL OF AAV USE IN KITCHEN ISLANDS MAY RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS AND THUS REQUIRES THE PREPARATION OF AN EIR

The evidence presented herein includes substantial evidence that the approval of AAVs in kitchen islands may result in significant impacts to human health and the environment including dangerous sewer gases (sometimes at undetectable but harmful levels) venting directly into occupied areas as a result of AAV malfunction. These gases may include infectious pathogens and explosive hydrogen sulfide gas. The impacts may be especially acute on elderly, young, pregnant and immunocompromised populations.

Evidence of these potential impacts includes the comments of Edward Saltzberg, journeyman plumber, registered mechanical engineer and past National President of the American Society of Plumbing Engineers. Mr. Saltzberg is eminently qualified to review and comment on the potential environmental impacts of AAVs in kitchen islands. Mr. Saltzberg is a nationally recognized mechanical engineer with over 45 years experience with plumbing, process piping, storm drainage, irrigation, heating and ventilation. Mr. Saltzberg's curriculum vitae is attached as Exhibit A(1).

California courts have long recognized Mr. Saltzberg's expertise in this field. Mr. Saltzberg's comment letter is attached as Exhibit A and is incorporated by reference into this comment letter.

Evidence of these potential impacts also includes the expert comments of sanitary engineer, Dr. Phyllis Fox. Dr. Fox received her doctorate in sanitary engineering from the University of California at Berkeley. Dr. Fox has 30 years of experience as a professional engineer, working for firms ranging from Unocal to Bechtel to the Sierra Club. She is a registered Professional Engineer (PE), atmospheric scientist, certified Qualified Environmental Professional (QEP), and a Diplomat Environmental Engineer (DEE), certified by the American Academy of Environmental Engineers in air pollution control. Dr. Fox's curriculum vitae is attached as Exhibit B(1).

Dr. Fox presents an evaluation of some of the health and safety problems arising from the malfunctioning of AAVs. Her comment letter is attached as Exhibit

B. The comments of Dr. Fox are incorporated by reference and hereby made a part of this comment.

These comments also reference a number of additional supporting technical documents, reports and other evidence that are attached hereto as appendices. These supporting exhibits are also incorporated by reference and hereby made a part of this comment.

A. AAVs Pose Substantial Impacts to Public Health and Safety

AAVs are one-way valves that replace conventional open-pipe vents extending through the roof. AAVs contain an elastomeric membrane that allows air to enter the sewage system under negative pressure. Under positive pressure, AAVs remain closed. AAVs are generally installed in roughly the same locations where open-pipe vents would otherwise have been installed.[30]

AAVs relieve only negative pressures, and do nothing to relieve back-pressure, thereby creating a risk of p-trap blow-out during positive pressure excursions. When a trap blows out under positive pressure conditions, it will necessarily allow sewer gas to enter the living area. Since the AAV is a mechanical device, it will eventually fail, unlike open-pipe vents, which have no moving parts. Also, since AAVs depend on moving parts, manufacturing defects will render a certain percentage of the valves ineffective. When AAVs malfunction or fail, sewage gas can enter the living area.[31]

It is well-documented that sewer gases commonly pose serious risks to public health from toxic gases including hydrogen sulfide (H2S), methane, carbon dioxide and ammonia, and also from airborne pathogens including tuberculosis, coxsackie A&B, dysentery, rotavirus, echovirus, cholera, common cold, hepatitis A, typhoid, polio and SARS.[32]

The incidence of diarrhea, cholera, diphtheria, and dysentery increased four-fold after toilets were moved indoors, due primarily to the unsanitary conditions of these fixtures. Other diseases also followed the toilet indoors, including typhoid, scarlet fever, and cerebro-spinal meningitis. In response, toilets were redesigned

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[30] Comments of Dr. Fox, Exhibit B, p. 11.
[31] *Id.* at 12.
[32] *Id.* at 2.

and plumbing codes were developed to reduce the health risks of unsanitary fixtures. The improvements included mandatory water flushing to remove waste products from the fixture walls and a permanent water seal built into the fixture to keep sewer gases out of occupied spaces.[33]

An adequate water trap is the primary means to prevent these toxic gases and diseases from entering the living area. The universal requirement of the water trap in the Uniform Plumbing Code has played a key role in eliminating or dramatically reducing the incidence of many of these diseases in the United States.[34]

The Uniform Plumbing Code requires open pipe venting systems to be used to protect the integrity of water traps. Venting allows sewage systems to "breathe." Plumbing systems are subject to positive and negative pressures that can siphon or "blow-out" the water trap contained in the "p-trap" under each fixture. Without vents, negative pressure can cause p-traps to siphon out, allowing sewer gas to enter the living area, while positive pressure can cause water traps to "blow out."[35]

AAVs are one-way valves that replace conventional open-pipe vents extending through the roof. Unlike conventional open-pipe vents, AAVs have moving parts that may jam in the open position, due to construction dust, bugs, insulation, garbage disposal debris, or other foreign matter, thereby providing a direct route for the entry of sewer gases. When they jam in the open position, they can allow sewer gases to leak into living spaces, even if the integrity of the p-trap is maintained.[36]

According to Dr. Fox, AAVs pose a threat to public health because they do not adequately protect water trap seals in the sewage system. As a result, sewer gases containing hydrogen sulfide and water-borne diseases may enter the living area through water traps that are siphoned or blown-out and/or through AAVs that have malfunctioned due to mechanical failure or jamming from foreign objects. Also, waste-borne diseases may enter the living area through siphoned or blown-out traps, or through malfunctioning AAVs, allowing residents to be exposed, and facilitating the spread of disease. As a result of these risks, Dr. Fox asserts that the

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[33] Comments of Dr. Fox, Exhibit B, p. 2.
[34] *Id.*
[35] *Id.*
[36] *Id.* at 3.

approval of AAVs has the potential to result in significant adverse environmental and public health impacts.

B. Hydrogen Sulfide Odors And Health Effects

Malfunctioning AAVs can result in the release of Hydrogen Sulfide odor into the living space. This gas can be harmful even at low levels. The impacts resulting from the release of this gas from failed AAVs should be evaluated in an EIR.

Hydrogen sulfide ("H2S") has a strong foul odor even at extremely low levels. Exposure to low levels of H2S causes irritation of the eyes and respiratory tract. Other symptoms include nervousness, dizziness, nausea, headache, and drowsiness. Exposure to higher concentrations can interfere with the sense of smell, making this warning signal unreliable. At higher levels, H2S can cause immediate loss of consciousness and death.[37]

The escape of explosive, poisonous, or asphyxiating gases into a building due to improper drain traps has caused injury and even death to human beings. For example, one sewer gas release from an improperly trapped latrine lead to a concentration of 40 ppb of H2S in a school building and caused 949 cases of acute illness consisting of headache, dizziness, blurred vision, abdominal pain, and fainting.[38]

The concentration of H2S in the air space in sewer lines can exceed concentrations that are known to be lethal. Sewer gases have caused the death of sewer workers. At equilibrium, the concentration of H2S would be about 1,400 ppm in the air space in a sewer line running at 75 F with about 5.0 mg/L of dissolved hydrogen sulfide. The concentration of H2S emitted from an opening in a drain trap created by a malfunctioning AAV would be about 280 ppm or about 400 mg/m3, at 20 percent of equilibrium. This exceeds the level that results in unconsciousness, respiratory paralysis, and death.[39]

Thus, if a resident came in close proximity with a malfunctioning AAV or blown-out drain trap, serious consequences could result, including the possibility of unconsciousness, respiratory paralysis, and death. The United States

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[37] Comments of Dr. Fox, Exhibit B, p. 4.
[38] *Id.*
[39] *Id.* at 5.

Environmental Protection Agency has adopted a reference concentration for H2S of 1 ug/m3 (approximately 1 parts per billion (1 ppb), or 0.001 parts per million (0.001 ppm)). The California Office of Environmental Health Hazard Assessment has adopted a chronic toxicity inhalation reference level for H2S of 10 ug/m3 (8 ppb, or 0.008 parts per million (ppm)).[40]

Chronic low-levels of exposure to H2S as low as 7 to 27 ppb have been shown to cause adverse health impacts including fatigue, restlessness, depression, memory loss, loss of balance, anxiety, lethargy, headaches, shortness of breath, persistent cough, and other effects. A malfunctioning drain trap or AAV could lead to similar chronic low-levels of exposure.[41]

Numerous studies have reported that eye irritation occurs between 5 ppm and 100 ppm and most typically at 10 to 20 ppm. The World Health Organization reports 10.5 ppm as the threshold for eye irritation. Prolonged exposure to H2S concentrations greater than 50 ppm can cause inflammation and dryness of the respiratory tract, including throat hoarseness, nasal secretions, cough, and dyspnea (i.e., shortness of breath).[42]

At higher levels, even very short-term exposures can lead to serious adverse health impacts or even death. For example, a worker exposed to high levels H2S for less than one minute suffered brain damage. Other workers exposed to H2S for periods of 5 to 30 minutes have suffered brain damage and death. Exposures to H2S at levels of 300 ppm can cause immediate death.[43]

Since H2S commonly exists in sewer gas at levels of up to 1,800 ppm, it is clear that a blown-out drain trap caused by an AAV or a malfunctioning AAV itself that allows sewer gas to infiltrate the living area, may result in serious adverse health impacts.[44]

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[40] Comments of Dr. Fox, Exhibit B, p. 5.
[41] *Id.* at 6.
[42] *Id.*
[43] Comments of Dr. Fox, Exhibit B, p. 7
[44] *Id.*

C. Pathogenic Risks Posed by Air Admittance Valves

In addition to the risk posed from sewer gas contaminating the indoor air environment with H2S, AAVs also increase the risk of the spread of dangerous pathogens. As discussed above, sewer systems can contain pathogens including tuberculosis, coxsackie A&B, dysentery, rotavirus, echovirus, cholera, common cold, hepatitis A, typhoid, polio and SARS. A Minnesota study expressly recommended banning the use of AAVs from commercial and residential kitchens due to the risk of sewer gas leaks spreading e-coli and other germs in foods in or around kitchen sinks.[45]

The World Health Organization ("WHO") published a study on the role of sewage in transmitting diseases, including SARS. The report concludes that ineffective water traps allowed sewer gas containing SARS to be drawn into living areas via negative pressure created by exhaust fans. According to the report, the principal sources of SARS are feces, vomit, urine and respiratory secretions. SARS spread through the Amoy Gardens apartment building due in large part to inadequately maintained water traps that allowed coronavirus from a single infected individual to travel through the plumbing system and infect 329 persons. The inadequate water traps allowed the SARS coronavirus to travel through waste pipes and re-enter living spaces after being flushed.[46]

The report concluded that the risk of transmission of SARS and other viruses may be significant in other countries as well if water traps are ineffective, particularly given the widespread use of exhaust fans in restrooms that are designed to create negative pressure that can draw sewer gases into the living area. The WHO Report emphasizes the importance of an adequate water trap to ensure that pathogens do not re-enter the living area, as occurred in Hong Kong. The Report also recommends that "[v]enting systems should be free of mechanical devices" due to their potential risk for failure.[47]

AAVs can create a direct route of access for sewer gases if the valves become jammed with construction dust, lint, bugs, garbage disposal refuse, clothes or

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[45] *Id.* at 13.
[46] *Id.* at 14.
[47] Comments of Dr. Fox, Exhibit B, p. 14-15.

dishwasher debris, or other foreign bodies. Any of these conditions would create a direct route of access for sewer gases to enter the living area.[48]

AAVs have also been linked to sick building syndrome.[49] This syndrome occurs when building occupants experience acute health impacts that appear to be linked to time spent in a building, but no specific illness or cause can be identified.[50] Many modern buildings have less ventilation for energy efficiency purposes. If a malfunctioning AAV is added to this configuration, there is an elevated risk that sewer gas will enter the living space of the building.[51]

D. AAVs are Known to Fail

There are numerous conditions under which AAVs may fail. Lint, dust or bugs may jam the valve in the open position. Garbage disposals or washing machines may force food or other particles into the valve. The AAV may also be damaged by a plumber's snake or by mishandling during installation. These conditions can and have caused AAVs to jam in the open position, providing a route for sewer gases to flow freely into the living space.

This has caused many to conclude that AAVs leak "badly and often."[52] Thomas Wanner, Executive Director of the Mechanical Contractors Association of Cleveland, testified to the Ohio Board of Building Standards that several pilot tests across the country resulted in failure rates between 10% and 100%.[53] Russ Wyman, a building official in Dallas Texas, conducted a test which demonstrated that 5 out of 5 AAVs leaked. Rob Rybak, a Plumbing Training Director in Cleveland, conducted a similar test that again showed 100% of the AAVs leaked. Mr. Wanner also testified that a pilot test in Columbus, Ohio found that 10% of the AAVs failed the final air test.[54]

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[48] *Id.* at 16.
[49] WHO Press Release, Attachment G, p.7.
[50] US EPA, Indoor Air Facts No. 4, Sick Building Syndrome, Attachment F.
[51] Email of Mike Rodgers, November 23, 2002, Attachment A(2) p. 8
[52] Testimony of Thomas Wanner, Attachment A(2) p.15.
[53] *Id.* at 16.
[54] Thomas Wanner, Air Admittance Valve Testimony, Ohio Board of Building Standards Open Hearing, (June 26, 1998), p.2., Attachment A(2).

A recent Minnesota study found a short-term AAV failure rate of 1.7%.[55] This is a significant reduction in health and safety protections from conventional venting systems. Moreover, according to expert Edward Saltzerg, the long-term failure rate is significantly higher.[56] The Minnesota study confirmed that sewer gas leaks from failed AAVs pose a significant risk to public health. It further found that the tighter building envelopes of modern, more energy-efficient buildings increase the danger of even slight leaks from AAVs.[57]

The American Society of Plumbing Engineers has issued a Policy Statement concluding that, "an air admittance valve is a mechanical device and, therefore, may be subject to malfunctions. It is usually installed in semi-concealed locations (inside walls, in attics, or under counters) and is not designed to relieve excess pressure built up from within a pluming drainage system."[58]

The City of Minneapolis Office of Operations and Regulatory Services stated, "any mechanical piece of equipment will eventually fail or perhaps lodge in the open position allowing entrance of sewer gases and disease."[59]

The City of Dallas Plumbing and Mechanical Code Administrator stated, "the screening configuration provided will not prevent dust and even worse small insects from interfering with the alignment of the diaphragm or its carrier, thus preventing the device from closing properly."[60]

At least one trade journal has reported numerous consumer complaints that air admittance valves, when used in conjunction with modern high volume clothes washing machines, have caused sewer gas incursion through bubbling toilets due to excess back pressure.[61]

In his attached 2005 comments, Mr. Saltzberg describes AAV failures in housing in the Detroit area. In that instance, a plumbing contractor installed AAVs in hundreds of homes. Because of gurgling in plumbing fixtures and poorly operating fixtures, the contractor had to re-plumb the houses and take out the

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[55] STS Consultants, Memorandum re: AAV study for Minnesota 3/2/07, Attachment A(2).
[56] Comment of Edward Saltzberg, Attachment A.
[57] STS Consultant, Memorandum re: AV study for the State of Minnesota, Attachment A(2) p. 2.
[58] Comments of Dr. Fox, Exhibit B(19).
[59] Comments of Dr. Fox, p. 12.
[60] *Id.* at 12-13.
[61] *Id.* at 13.

AAVs and put in conventional venting. The plumbing contractor lost clients due to the problem with the AAVs and couldn't take new work due to the time being spent by his plumbing crews on re-piping the existing houses. The plumbing contractor ultimately sued, resulting in a confidential settlement.[62]

In response to his public commentary on the failure rates of AAVs, Mr. Saltzberg was contacted a number of times by individuals with experiences that corroborated his research, including the attached emails from Lori Briley and Mike Rogers. Ms. Briley shares her company's story of having AAVs fail in the 187 homes in which they were installed. Mr. Rogers' email recounts how a faulty AAV resulted in chronic health problems until the problem was identified and the AAV was removed.[63]

In Colorado, an apartment complex had an over 2% failure rate of AAVs. There were more failures, but AAVs can't be tested in place so AAVs had to be taken out of the piping for testing. There were AAVs that were leaking sewer gas that the testers could smell.[64]

Exposure to sewer gas from a failed AAV may result in significant adverse health effects on residents, including dizziness, headaches, blurred vision, nausea, sleep loss, and other effects. If H2S levels in the sewer system are sufficiently high, more serious health effects including unconsciousness, respiratory tract irritation, and burning eyes are possible.[65]

E. AAVs Pose Particularly High Risks in Kitchen Islands

The kitchen environment includes a number of special features that make installation of AAVs in kitchen islands particularly risky. The high positive pressure generated by garbage disposals increases the likelihood that AAVs may get fouled or jammed open with food particles.[66] In his attached comments, Mr. Saltzberg testifies that AAVs should not be used in combination with garbage disposals because of the very high positive pressure in the waste system when they operate.[67] AAVs relieve only negative pressure and are neither designed nor able to

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[62] Letter from Edward Saltzberg, Attachment A(5) p.2.
[63] Letter from Edward Saltzberg, Attachment A(2) p. 8-11.
[64] Letter from Edward Saltzberg, Attachment A(5) p. 2.
[65] Comments of Dr. Fox, Exhibit B, p. 13.
[66] Letter from Edward Saltzberg, Attachment A p.2.
[67] Letter from Edward Saltzberg, Attachment A.

relieve positive pressure. This positive pressure can allow the discharge of the garbage disposal to contaminate the inner workings of the AAV and cause the AAV to malfunction, thereby allowing sewer gas into the occupied space.[68] AAVs are susceptible to being jammed in the open position by food particles and other small objects that may be discharged by garbage disposals. Mr. Saltzberg further cautions that a plumber or homeowner using a snake to clean out a stoppage, a likely occurrence at a kitchen island, can damage AAVs.[69]

Kitchen fans and range hoods significantly increase the risk of dangerous levels of sewer gas leaking into the living space from failed AAVs. Many kitchen exhaust fans, when operating, create negative pressure in the kitchen, keeping the AAV in a partially open position. This allows sewer gas into the kitchen. Moreover, when AAVs leak or are jammed in the open position, kitchen fans draw significantly higher levels of sewer gas into the living space. The Minnesota studies confirmed that the combination of exhaust fans and failed AAVs is likely to result in dangerous levels of sewer gas contaminating indoor air quality.[70] This is a particular concern with the high-powered fans found in many of today's kitchen hoods.

Kitchen islands are also an inappropriate location for AAVs because food is prepared for human consumption in these areas. Dr. Donald Vesley, a professor at the University of Minnesota, with degrees in environmental health and public health, specifically recommends against AAV installation in commercial or residential kitchens because aerosols from released sewer gas may contain enteric organisms that could contaminate food particles.[71]

For these reasons, AAVs are particularly inappropriate for use in kitchen islands. The risk associated with their installation near food preparation areas and the conditions of air pressure and vents in those areas makes them unreliable and dangerous. At a minimum, the Commission should draft an EIR studying the impacts outlined in this comment before determining whether to approve these devices.

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[68] *Id.*
[69] *Id.*
[70] DOLI Sewer Gas Risk Analysis, Attachment A(4).
[71] Addendum to Report, Donald Vesley, Attachment A(3).

F. AAVs impact vulnerable and immunosuppressed populations

Individuals with intact immune systems are much less likely to become ill from environmental exposures than immunosuppressed individuals and vulnerable populations such as the elderly, the young and pregnant women. Individuals with compromised immune systems such as persons with diabetes or AIDS or persons taking immunosuppressive medications would be especially vulnerable to health impacts from leaking AAVs.[72]

G. An EIR Must Be Prepared to Evaluate these Risks

Substantial evidence exists that the approval of AAVs in kitchen islands may result in significant direct impacts to human health and the indoor air quality environment. Accordingly, the Commission must comply with the requirements of CEQA before it may adopt HCD's proposed AAV regulations.

III. THE 2007 CPC ADOPTION NOTICE IS INEFFECTIVE BECAUSE IT PROVIDES INCORRECT SUBSTANTIVE INFORMATION

The California Building Standards Law requires all building standards submitted to the Commission for approval to undergo a pre-notice technical review by a Code Advisory Committee ("CAC"). The CAC shall then make a recommendation on each code change submittal. As required by the California Building Standards Administrative Code, that recommendation is then incorporated into the Commission's proposed rulemaking and is part of the record required to be made available for public review and comment.

In this instance, the CAC's recommendation was incorrectly reported in the rulemaking documents noticed for the proposed AAV regulations. The CAC Matrix Adoption Table, included as part of the noticed rulemaking documents, erroneously stated that the CAC recommended that the proposed AAV regulations be "Approved" as submitted when, in fact, the CAC actually recommended that these regulations be withheld pending further study.

This is a serious substantive error because it provides the public false information that the technical advisory committee had no concerns with the proposed code changes. This error violates the public notice requirements of the

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[72] STS Consultant, Technical Memorandum re: Health Risk Evaluation of AAVs, Attachment E.

California Building Standards Administrative Code. Section 1-901(c)(4) of the California Building Standards Administrative Code states that the CAC recommendations and their reasons for recommendations shall be made available to the public for comment as part of the 45 day APA public comment period notice.

Here, the 45-day Notice was defective because it contained a substantive error that deprived interested parties of proper notice, as well as their opportunity to review and comment on the rulemaking. The CAC matrix misleads the public into believing that the CAC recommended adoption of the proposed AAV Regulations, when, in fact, the CAC recommended withdrawal of the proposed AAV Regulations pending further study due to unresolved concerns over performance and safety. Moreover, the CAC matrix fails to provide the CAC's reasons for its recommendations as required by Section 1-901(c)(4).

Due to this error, the Commission must issue a new revised notice that accurately conveys the Code Advisory Committee's decision and reasoning with respect to the proposed AAV regulations and provide a new 45-day public comment period. Without such action, this rulemaking process fails to comply with the requirements of the APA and the California Building Standards Administrative Code.

IV. THE PROPOSAL TO APPROVE AAV USE IN KITCHEN ISLANDS FAILS TO MEET AT LEAST TWO OF THE NINE-POINT CRITERIA OF CALIFORNIA HEALTH AND SAFETY CODE SECTION 18930

Before the Commission may adopt a proposed building standard, it must be satisfied that the proposing agency has adequately justified adoption under the nine-point criteria analysis of Health and Safety Code Section 18930. The proposal to approve the use of AAVs in kitchen islands, however, fails to meet at least two of the nine-point criteria. Accordingly, the Commission may not find that these proposed standards are justified under Section 18930 criteria.

Section 18930 requires findings under the nine-point criteria to be supported by substantial evidence. If the Commission finds a factual finding to be arbitrary or capricious or to lack substantial evidence, it shall return the standard back to the proposing agency for reexamination.[73]

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[73] Health & Saf. Code § 18930, subd. (d) (1).

In the case at hand, there is substantial evidence that approving the use of AAVs in kitchen islands, without first preparing an EIR, would be contrary to the public interest and would be unreasonable, arbitrary and unfair. Furthermore, the record lacks substantial evidence to support a contrary finding. Accordingly, the proposed approval of AAVs for kitchen islands lacks justification under at least two elements of the nine-point criteria

A. Approval of AAVs in Kitchen Islands Without First Preparing an EIR Would Not Be In the Public Interest

Approval of use of AAVs in kitchen islands, without first preparing an EIR, would not meet the "public interest" element of the nine-point criteria. Health and Safety Code Section 18930, subdivision (3), requires agencies to determine if the "public interest requires the adoption of the building standards." In the case at hand, the approval of AAVs in kitchen islands, without first preparing an EIR, would violate CEQA. Approval of building standards in violation of state law would, in itself, be contrary to the public interest. Approval of AAVs in kitchen islands also would be contrary to the public interest due to the numerous potential significant environmental, health, and safety impacts associated with these products that could adversely affect the public.

As discussed in detail above, it is well settled that the Commission and HCD must comply with CEQA prior to adopting new building standards that may have a significant impact on public health, safety or the environment. Furthermore, it is well settled that compliance with CEQA is in the public interest.[74] CEQA "protects not only the environment but also informed self-government."[75] CEQA informs the public and its responsible officials of the environmental consequences of their decisions before they are made, ensuring consideration of alternatives and requiring

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[74] See *Kane v. Redevelopment Agency of City of Hidden Hills* (1986) 179 Cal.App.3d 899, 905; *People By and Through Dept. of Public Works v. Bosio* (1975) 47 Cal.App.3d 495, 526; see also Pub. Resources Code § 21000.

[75] *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 108.

imposition of reasonable mitigation measures.[76] Failure to comply with CEQA prior to the adoption of this proposed regulatory change would thus be contrary to the public interest in ensuring informed self-government and in protecting public health, safety and the environment.

Furthermore, substantial evidence exists that approval may result in significant environmental, health, and safety impacts that could adversely affect the public. As detailed above, the approval of AAVs in kitchen islands may result in serious environmental and public health impacts stemming from the incursion of sewer gas and dangerous pathogens into the living area. Approval of AAVs in kitchen islands without full disclosure, evaluation and mitigation of these impacts would not be in the public interest and thus may not be justified under the nine-point criteria.

B. Approval of AAVs in Kitchen Islands Without First Preparing an EIR Would Be Unreasonable, Arbitrary and Unfair Because it Would Violate State Law

Health and Safety Code Section 18930, subdivision (4), requires proposing agencies to justify their proposed building standards on the grounds that the proposed standard "is not unreasonable, arbitrary, unfair, or capricious, in whole or in part." In the case at hand, it is manifestly unreasonable, arbitrary and unfair to propose the adoption of building standards that violate state law. As discussed above, authorizing the approval of AAVs in kitchen islands without first preparing an EIR would violate CEQA. Since it would be unreasonable, arbitrary and unfair to approve building standards in a manner contrary to law, such approval may not be justified under the nine-point criteria.

Furthermore, the proposed approval of AAVs in kitchen islands is unfair and unreasonable due to the substantial evidence of potential significant impacts associated with these devices. Approval of these devices without first requiring full disclosure, evaluation and mitigation of its potential impacts is unfair to the public. Moreover, a proposal by an agency to have a potentially hazardous plumbing device approved without such disclosure, evaluation and mitigation is unreasonable.

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[76] *Id.*; Pub. Resources Code §§ 21063 & 21100.

In HCD's *Initial Statement of Reasons* for approving AAVs, a short history of AAV use is noted and then a statement is made that, "HCD has no history of product failure." In response to that, expert plumber Edward Saltzberg submits "there have been many failures with the use of AAVs, but most end up with a confidential settlement so the public doesn't know about them."

Mr. Saltzberg's comment and other attachments to this comment serve as substantial evidence to show that the assumed failure rate is incorrect. Any meaningful review of AAVs must include a review of the details of AAV failure lawsuits. HCD should withhold approval of this product unless AAV manufacturers waive confidentiality agreements regarding AAV failure lawsuits and provide HCD with the details of these lawsuits. Without such information, it is impossible to meaningfully evaluate the safety of this product.

V. CONCLUSION

The California Pipe Trades Council respectfully requests that the Commission disapprove these proposed code changes or, in the alternative, require further study of the proposals prior to adoption. Substantial evidence exists that the use of AAVs in kitchen islands may result in significant health, safety and environmental impacts. Much of the available literature and scientific studies show that AAVs are likely more dangerous and less reliable than standard kitchen vent pipes. As a result, state law requires the preparation of an EIR prior to adoption of these proposed regulations. Adoption of these proposed regulations prior to completion of this review would violate state law.

Furthermore, adoption of these regulations is not justified under the California Building Standards Law. The California Building Standards Law requires that building standards be justified in terms of the nine-point criteria listed in Health and Safety Code section 18930. Among these criteria are the requirements that adoption of the proposed standards be in the "public interest" and not be "unreasonable, arbitrary, unfair, or capricious." Because the safety and reliability of AAVs in kitchen islands has not been sufficiently demonstrated or evaluated, approval of the proposed HCD code changes would not be in the public

interest. Moreover, approval of the use of AAVs in kitchen islands would be unreasonable, unfair and contrary to the public interest since it would violate the statutory requirements of CEQA.

Sincerely,

Thomas A. Enslow
Loulena A. Miles

LAM:bh
Attachments

cc: Ted A. Reed
Executive Director
California State Pipe Trades Council